

II. Claim Rejections Under 35 U.S.C. §102/103

Claims 1-19, 21 and 22 are rejected under 35 U.S.C. §102(e) as anticipated by U.S. Patent No. 5,927,185 to Vyncke et al. (Vyncke); and claim 20 is rejected under 35 U.S.C. §103(a) as unpatentable over Vyncke in view of U.S. Patent 5,731,823 to Miller et al. (Miller). The rejections are respectfully traversed.

Applicants assert that Vyncke does not disclose each and every feature recited in the rejected claims. For example, Vyncke does not disclose a method of processing image data of a color image for marking, the color image containing overmarked pixels where at least one first color is to be overmarked by a second color, the method comprising generating information that designates the overmarked pixels; performing raster image processing to create a raster image of the color image, the raster image processing including overmarking processing that allows both the at least one first color and the second color to be separately included in the overmarked pixels in the same raster image; and modifying image data of the overmarked pixels in the raster image to achieve undercolor reduction by reducing a value corresponding to a reduced amount of an underlying marking material. Similarly, Vyncke does not disclose a system that processes image data of a color image for marking, the color image containing overmarked pixels where at least one first color is to be overmarked by a second color, as recited in rejected claim 10.

As discussed in previous personal interviews and amendments, overmarked pixels are pixels in which a top color, such as black, is to be marked over any combination of underlying colors, such as cyan, magenta and yellow (see page 5, line 33-page 6, line 2 of the specification). This definition is well-known to those of ordinary skill in the art. For example, U.S. Patent No. 4,504,160 describes overmarking or overprinting by each of four print heads through associated different color ribbons. In contrast, Vyncke does not refer to,

or in any way relate to, the overmarking of pixels. Accordingly, Vyncke does not disclose any of the features recited in the rejected claims.

Rather, as discussed during the personal interview, Vyncke relates to a method for processing a set of page description language (PDL) commands to reduce the complexity of such PDL commands in graphic design. To achieve this goal, the method includes a step of translating the PDL commands into an object display list (ODL) which is a structured list containing mathematical descriptions of the graphical objects and their properties (col. 2, lines 57-61). After such graphical objects are identified in the ODL, the PDL commands corresponding to the graphical objects are modified so that a particular property is no longer present (col. 2, line 67-col. 3, line 3). In one embodiment of the invention of Vyncke, color mapping and ink reduction is provided to improve the PDL file by reducing the required number of basic colors and inks, respectively (col. 3, lines 9-12 of Vyncke).

In the ink reduction process, Vyncke discloses that a PostScript (i.e., PDL) file will call for the use of a large number of inks and that it is desirable to reduce the number of inks in the list produced by the ODL. The method of Vyncke for such reduction is shown in Fig. 6 (see also col. 6, lines 53-59 of Vyncke). As shown in Fig. 6, the ODL is created from the PDL 170 and a list of all the inks included in the PDL are put into an ink list 172. Once the ink list is created, a list of available inks is selected from the ink list 174. Inks are then eliminated by expressing them in terms of available inks 176, thereby optimizing the ink list. A color management system then redefines the other inks in terms of combinations of the available inks 178 that may be used to achieve the needed or listed color (see Fig. 6, lines 63-Fig. 7, line 6). When all of the inks have been redefined in the ink list, the object display list is scanned and any modified inks in the color definition of each object are replaced with the corresponding available inks (col. 7, lines 14-17). Thus, Vyncke discloses "ink reduction" by eliminating from the created ink list those inks which are not available in the output device,

i.e., display or printer. Vyncke also redefines any inks that are missing or redundant to those inks that are available.

Accordingly, Vyncke does not relate in any way to generating information that designates an overmarked pixel, performing raster image processing to create a raster image of the color image, the raster image processing including overmarking processing that allows both the at least one first color and the second color to be separately included in the overmarked pixels in the same raster image, and modifying image data of the overmarked pixels in the raster image to achieve undercolor reduction by reducing a value corresponding to a reduced amount of an underlying marking material.

The Office Action alleges that Vyncke discloses a method of processing image data of a color image for marking, the color image containing overmarked pixels where at least one first color is to be overmarked by a second color at col. 2, line 55-col. 3, line 17 of the applied reference. However, beginning at col. 2, line 55, Vyncke merely discloses that the PDL commands are translated into an object list of the graphical objects and their properties. Vyncke discloses that those objects which are completely hidden or will not be otherwise shown in the rendered output are identified in the ODL and that the PDL commands corresponding to the graphical objects are modified so that the property is no longer present. In other words, the object is deleted from the rendered image. The Office Action also identifies col. 4, lines 13-31, and Figs. 7a- 8b, as corresponding or otherwise disclosing the feature recited in the rejected claims. However, beginning at col. 4, line 13, Vyncke merely describes what is contained in a PDL file and how those commands are converted and referred to in the ODL using Vyncke's preferred format for the ODL. The recitation at col. 4, lines 13-31, in no way relates to overmarking or any of the features recited in the rejected claims.

Furthermore, Figs. 7a and 7b show a picture illustrating clipping of graphical objects and a flowchart of the procedure for removing useless clips and therefore do not relate to undercolor reduction, overmarking of pixels, or otherwise reducing the amount of underlying marking material, as recited in the claims. Similarly, Figs. 8a and 8b refer to a picture illustrating hidden graphical objects and a flowchart of the procedure for removing such masked or hidden objects. Thus, Figs. 8a and 8b again refer merely to the clipping and removal of graphical objects that will not be shown in the finished rendered image.

The Office Action also alleges that col. 7, line 49-col. 8, line 57, discloses raster image processing including overmarking processing that allows both the at least one first color and the second color to be separately included in the overmarked pixels in the same raster image. However, the identified section of Vyncke again refers to the removal of "useless clips, gross clipping and hidden objects". Thus, the identified section does not relate to creating a raster image of the color image, the raster image processing including overmarking processing, that allows both the at least one first color and the second color to be separately included in the overmarked pixels in the same raster image. Rather, the identified section merely describes deleting useless objects including those that are completely hidden by an opaque or solid object (col. 7, lines 57-59).

The Office Action further alleges that col. 6, line 48-col. 8, line 57, discloses modifying image data of the overmarked pixels in the raster image to achieve undercolor reduction by reducing a value corresponding to a reduced amount of an underlying marking material. However, the identified section of Vyncke does not disclose the feature as alleged in the Office Action. Rather, as discussed above, col. 6, line 46-col. 7, line 46, describes ink reduction by creating an ink list, eliminating those inks that are not available and managing the available colors to duplicate the inks required. Thus, there is no indication of reducing a value corresponding to a reduced amount of underlying marking material to achieve